The identification of reasons, solutions, and techniques informing a theory-based intervention targeting recreational sports participation

ST QUINTON, Tom <http://orcid.org/0000-0002-5014-4729> and BRUNTON, Julie <http://orcid.org/0000-0002-5808-0168>

Published version

ST QUINTON, Tom and BRUNTON, Julie (2018). The identification of reasons, solutions, and techniques informing a theory-based intervention targeting recreational sports participation. Research quarterly for exercise and sport, 89 (2), 255-264.

Abstract

Purpose: This study is the third piece of formative research utilizing the Theory of Planned Behavior to inform the development of a behavior change intervention. Focus groups were used to identify reasons and solutions to previously identified key beliefs in addition to potentially effective behavior change techniques. Method: A purposive sample of 22 first-year undergraduate students (n = 8 males; M = 19.8 years, SD = 1.3 years) attending a university in the North of England, UK, was used. Focus groups were audio-recorded, transcribed verbatim, analyzed thematically and coded for recurrent themes. Results: Fourteen reasons were given regarding enjoyment, eleven reasons for friends' approval, eleven reasons for friends' own participation, fourteen reasons for the approval of family members, and ten solutions to time constraints. Eleven distinct techniques were suggested to attend to these reasons and solutions. Conclusion: This qualitative research will be used to inform the development of a theory-based intervention to increase students' participation in university recreational sport.

Keywords: behavior change methods; theory of planned behavior; intervention development; recreational sport

Sport refers to physical activities with certain rules and organized conditions (Coakley, 2009). Students participating in university recreational sport may see an improvement in academic studies (Huesman, Brown, Lee, Kellogg, & Radcliffe, 2009), a reduction in stress (Kanters, 2000), and greater rates of retention (Kampf & Teske, 2013). Despite these benefits, rates of participation decrease when students begin higher education (Gucciardi & Jackson, 2015). Despite investing millions of pounds to increase participation rates in the UK, the interventions funded by Sport England (Sport England, 2012) have demonstrated limited success to date. For example, although the Active Universities Project showed a 2% increase in sports participation within the first year, no change was found in the following two (Sport England, 2014). One explanation for these modest findings could be the lack of theory used in intervention development. As theoretical designs outperform atheoretical approaches (Webb, Joseph, Yardley, & Michie, 2010), theory should be included within interventions attempting to change behavior. More specifically, theory-based interventions could prove useful in increasing participation rates in university recreational sport.

TPB and Behavior Change

With a number of theories developed to understand behavior, one of the most widely used is the Theory of Planned Behavior (TPB; Ajzen, 1985). According to the TPB, intention is the proximal determinant of behavior and is determined by three factors; attitude, subjective norm, and perceived behavioral control. Attitude refers to the evaluation of behavior, subjective norm concerns the social pressure to perform the behavior, and perceived behavioral control refers to the amount of control over the behavior. These determinants are influenced by behavioral, normative, and control beliefs, respectively. Behavioral beliefs are the perceived consequences of behavior and the evaluation of these consequences. Normative beliefs are the perceived expectations of important referents and

the motivation to comply with such referents. Control beliefs are the evaluation of factors that may facilitate or impede behavior. To identify suitable intervention targets, formative work comprising of belief elicitation and belief measurement should be undertaken (Ajzen, 2011). Those critical beliefs should then be the focus of behavior change interventions.

Reasons and solutions. Despite offering robust guidelines on the identification of *what* to change, the TPB is relatively silent on *how* to do so. As such, interventions successfully changing the psychological processes have been scarce, with some even suggesting a retirement of the theory (Sniehotta, Presseau, & Araújo-Soares, 2014). To address this gap, two studies have attempted to identify the 'reasons' and 'solutions' to previously identified key beliefs to provide avenues for the shaping of health messages (e.g., Epton et al., 2015; Vayro & Hamilton, 2016). Using open-ended questions within a questionnaire, Epton et al. (2015) asked participants to provide up to three reasons for each key belief in addition to rating the importance of these responses. The behaviors under investigation were fruit and vegetable uptake, binge drinking, smoking, and physical activity within a first-year university sample. For example, participants stated 'reducing the risk of disease' as the salient reason for physical activity improving health. Vayro and Hamilton (2016) identified the reasons and solutions to key beliefs pertaining to healthy eating within truck drivers. One solution relating to a belief concerning time constraints, for example, was to have the food already prepared. The additional information from these reasons and solutions were then used to form the content of theory-based messages.

Despite providing greater information on the content of interventions, this work was undertaken using questionnaires, thus neglecting the opportunity for valuable information to be gained from other qualitative approaches, such as focus groups. Indeed, such an approach allows for a detailed account of participants' perceptions that would be less accessible in quantitative approaches (Krueger & Casey, 2014). Furthermore, as Vayro and Hamilton

(2016) acknowledge, these reasons and solutions do not specifically identify how change can be achieved. As an example, Epton et al. (2015) found 'Aids concentration' as a solution to 'a lack of time'. Although providing additional information countering the key belief, it is still not clear how one should use this information to target this belief within an intervention. That is, how should one specifically integrate the idea that physical activity 'Aids concentration' within a theory-based message? To answer this type of question, one must refer to the literature on techniques.

Behavior change techniques and taxonomies. The changing of behavior depends heavily on the 'active ingredients' within interventions, commonly known as behavior change techniques (BCTs; Michie et al., 2013). Taxonomies of BCTs were recently developed to standardize intervention ingredients and thus provide a common language for interventionists to utilize techniques. For example, the CALO-RE taxonomy (Michie et al., 2011), which targets change in physical activity and eating behaviors, includes 40 BCTs such as 'Provide normative information about others' behavior', 'Action planning', and 'Time management'. Similarly, the BCT taxonomy (v1; Michie et al., 2013), which is aimed at behavior in general, includes 93 distinct BCTs, organized into 16 groupings. In addition to standardizing scientific language, these classifications enable interventionists to understand the different types of BCTs available to potentially alter specific psychological targets. To gain a greater understanding of this, researchers linked BCTs to psychological processes (e.g., Cane, Richardson, Johnston, Ladha, & Michie, 2015; Michie, Johnston, Francis, Hardeman, & Eccles, 2008). Due to the number of constructs used in health psychology, these studies used the Theoretical Domains Framework (Cane, O'Connor, & Michie, 2012) to categorize determinants. As an example of specific links, the experts within the Michie et al. (2008) study agreed that the domain 'Beliefs about consequences' could be targeted with the BCTs 'Self-monitoring', 'Persuasive communication', 'Information regarding the behavior',

'Feedback', 'Self-talk', and 'Motivational interviewing'. Similarly, using techniques within the BCT taxonomy (v1), Cane et al. (2015) linked ten BCTs to the domain 'Social Influences' including 'Information about others' approval' and 'Modelling'.

The benefit of linking BCTs to determinants is that it allows intervention designers to select potentially useful mechanisms of change. Despite this, there are a couple of potential issues relating to the mapping of BCTs. First, the identification of appropriate BCTs through this process was conducted through an expert consensus approach, rather than an evidence base. As such, there could be BCTs included that do not change the theorized determinants or BCTs not included that do in fact have the potential to change such processes. Indeed, Prestwich et al. (2014) found no support for the use of setting graded tasks to increase self-efficacy, despite Michie et al. (2008) suggesting this BCT would be useful. Although research is in its infancy regarding technique effectiveness, failure to link BCTs to determinants using evidence is problematic (de Bruin, Crutzen, & Peters, 2015). Second, due to the number of BCTs applicable to each domain, it can be difficult to identify which specific technique, amongst many, will be appropriate to the behavior under investigation.

Taking these two issues into consideration, the identification of the most appropriate BCTs may be facilitated by gaining the opinions of the population under study. More specifically, BCTs provided by a sample of the population may result in the identification of techniques not linked to certain domains. If BCTs mirror those previously suggested, the specific techniques elicited from the population may have an enhanced likelihood of success, particularly due to the number of techniques linked to each domain.

In summary, studies have helped shape the content of health messages by identifying reasons and solutions to relevant psychological targets. These studies, however, do not make use of mapping approaches that provide explicit links to potentially effective BCTs. Even when these approaches are used, there may be BCTs lacking utility that are mapped onto

domains or effective BCTs that are missing altogether. The number of BCTs relevant to each domain also adds confusion to those most appropriate. Although such issues are a product of the early stages of BCTs and taxonomies, the problems are nevertheless apparent. Gaining information on these issues from the participant perspective could be an important avenue to pursue. Making use of a qualitative approach may provide an ideal methodology to answer such research questions.

Purposes

The study was designed to (a) highlight the reasons and solutions to the key beliefs identified in a previous study (Author citation, in press) and (b) identify potentially effective BCTs to attend to these beliefs from the participant perspective. To the authors' knowledge, this is the first study qualitatively targeting previously identified salient beliefs concerning university students' recreational sports participation using focus groups. With this, such work will add to this field of study by identifying the reasons, solutions, and BCTs that can help facilitate the development of a tailored behavior change intervention attempting to modify critical beliefs.

Method

Study Design and Participants

The study used a qualitative design to investigate students' views and experiences of university recreational sport. Participants were first-year students attending a university in the North of England, UK, and were eligible if they were enrolled on a full-time degree course. Demographics of study participants are summarized in Table 1.

[Table 1 near here]

Procedures

Recruitment. After gaining ethical approval from the university ethics board (Ref: SSHS/2016/023), a purposive sampling strategy was used to recruit participants from various degree courses. Participants were approached within lectures where a study outline, information sheets and contact details were provided. Once contact was made, interested participants were given a more detailed information sheet which outlined their potential involvement in the study. Snowball sampling was also used, with interested participants asked to inform others of the study within their cohort. To ensure a varied range of degree subjects within each focus group, participants were arranged under degree programs and assigned to a group based on their time of acceptance (i.e., the first confirmed student from six different degree courses were assigned to focus group one).

Focus groups. Focus groups were used to gain a deeper understanding of the research question (Krueger & Casey, 2014). The researcher booked a quiet room within the university at a date and time convenient to the participants. Participants gave full consent and completed a self-report questionnaire of demographic characteristics (e.g., age, sex, year of study, degree course). A semi-structured focus group schedule was employed consisting of open-ended questions and specific areas of interest (see Table 2 for example questions). The design and content of the schedule was developed based on formative research and the researchers' past experience with qualitative research. Post-it notes and a white board were used to highlight responses and generate further discussions. Participants were probed to reveal more in-depth information throughout the session when appropriate. Upon completion, participants were thanked for their participation and were given the opportunity to add any additional information. Focus groups were audio-recorded and anonymity was ensured with pseudonyms used both during the focus groups and data transcription. With the study being

heavily reliant on data from a formative study undertaken during semester one, focus groups were undertaken during the second semester of the 2016/2017 academic year (March-April).

[Table 2 near here]

Analysis

Thematic analysis was conducted by both authors of the paper using NVivo 10 (TSQ and JB). The first author had previous experience with qualitative research and had undergone additional training prior to the analysis. The second author had extensive knowledge and experience in qualitative methodologies. The analysis followed the thematic analysis specifications outlined by Braun and Clarke (2006). First, data were transcribed verbatim by the first author, printed and read several times over for familiarity. Transcripts were inductively analyzed into initial codes by both authors independently and these codes were analyzed thematically into recurrent themes. For example, phrases such as 'be with friends' and 'hang out with mates' were placed within the theme 'Socializing'. Themes were then placed deductively under the respective question heading (i.e., see example exploration and technique questions within Table 2). Comparisons were then made between these themes and those identified initially within the printed copies.

Results and Discussion

Participants

Participants were 22 first-year undergraduate students (n = 8 males; M = 19.8 years, SD = 1.3 years) who attended one of four focus groups. Two groups consisted of five participants and two groups included six participants.

Reasons and Solutions

Fourteen reasons were given as to why university recreational sport is enjoyable (see

Table 3), eleven reasons were given for why friends may approve of participation (see Table 4), fourteen reasons were given for the approval of family members (see Table 5), and eleven reasons were given for why friends might themselves participate in university recreational sport (see Table 6). With regards to time constraints, ten solutions were offered (see Table 7). Participants also identified the most important reasons and solutions to identified beliefs.

[Table 3 near here]

[Table 4 near here]

[Table 5 near here]

[Table 6 near here]

[Table 7 near here]

BCTs

Twelve distinct BCTs were identified; three influencing enjoyment, two for the approval of friends, one for the approval of family members, three for the participation of friends themselves, and five for time constraints (see Table 8).

[Table 8 near here]

Discussion

The study used a qualitative approach to identify the reasons and solutions relating to key beliefs previously found to influence student participation in university recreational sport. The study also identified BCTs that could be effective in targeting these beliefs if included within a theory-based intervention to increase participation rates. These findings and their implications will now be discussed.

Reasons and Solutions

To convince students that university recreational sport is enjoyable, a theory-based message should seek to include the reasons identified in Table 3. For example, it could be

fruitful to emphasize that university recreational sport has a relatively low cost and provides a number of benefits relating to mental well-being. As three focus groups identified 'Socializing' as being an important reason, this reason could offer the greatest utility. Thus, rather than merely stating 'recreational sport is enjoyable', a health-related message should also justify this statement with other social benefits. Targeting the reason 'a lack of competition' may also be a more appropriate reason due to one group stating its importance. Furthermore, 'Health and fitness benefits' was also mentioned as the most important reason by one participant, thus may also be a suitable reason to promote the enjoyable nature of university recreational sport.

Regarding the approval of friends, the reasons outlined in Table 4 could provide an intervention with useful additional information. Amongst other reasons, participants stated that friends would approve of their participation due to the health benefits that can be achieved and the sensible nature of the behavior. Including such benefits within health messages could persuade students that friends are supportive of their participation in recreational sport. In terms of the most important reason, all four groups stated to 'Socialize' as that with most significance. That is, friends would approve of their participation because it enables them to be sociable. This reason implicates a health message such as 'Friends may support your decision to play sports because it provides you with an opportunity to socialize', rather than merely stating 'Friends may support your decision to play sports'.

Concerning the approval of family members, Table 5 shows the different reasons elicited from the focus groups that could increase the utility of interventions targeting this belief. Regarding the reasons potentially offering greater promise, two focus groups stated the most important related to happiness, one group suggested it was to make friends, and one group stated it was to socialize. As such, there are a number of reasons that a theory-based message could include to persuade students of the approval of family members.

As can be seen in Table 6, a total of eleven reasons were mentioned as to why friends may themselves participate in recreational sport. Incorporating reasons such as 'study relief' or to 'improve sport-specific skills' within a theory-based message may provide students with appropriate reasons for them to also engage in the behavior. Concerning the most important reason, all four groups agreed on the reason 'to socialize' as being the most important. This reason may thus offer the greatest utility in altering this belief. For example, a theory-based message could include 'your friends participate in recreational sport because it provides them with an opportunity to socialize'.

Finally, Table 7 shows the ten solutions that could be used within an intervention to address time constraints. All four focus groups suggested a solution relating to greater organization or preparation as the most important. This suggests that participants felt being better at organizing their time would enable them to participate in recreational sport. Although the majority of participants within each group agreed with this solution, one participant did state 'prioritize' as being the most important. Three groups also suggested commitment as being a solution to time constraints, although this was not the most important. The implications here are that a number of solutions can be used to attend to issues of time. These solutions, as is highlighted below, can be attended to using a number of BCTs.

Although there is a lack of research identifying the reasons and solutions to previously elicited beliefs, particularly in reference to university recreational sports participation, the study does share similarities with the PA study conducted by Epton et al. (2015). For example, in their study, participants mentioned that friends would want them to engage in the behavior because they could 'Do it together'. Furthermore, a solution to time constraints was 'Plan it into your day'. Such similarities suggest students possess some similar explanations for certain beliefs (i.e., why friends may want them to participate and

how time constraints can be overcome). However, the lack of research conducted within this area prevents any further comparisons.

BCTs

In terms of potential BCTs to deliver these messages, a number of strategies were identified by the focus groups to address each belief (see Table 8). As the participants did not have experience or knowledge of the BCTs, they were stated in lay language. This discussion will therefore link those that were expressed with either a technique or one closely related.

From the perspective of the participants, 'Information about emotional consequences [5.6]' could be used to promote the important reasons concerning enjoyment. More specifically, it was suggested that the consequences of participation could be specifically endorsed using posters and flyers. Participants also suggested that such messages could be delivered by friends and the sport development team within the university. Technique specific, this relates to a 'Credible source [9.1]' as the information provided (i.e., that sport is enjoyable) is presented by those identified as being trustworthy. It was also suggested that experiencing participation could facilitate the enjoyment of sport. The BCT 'Behavioral experiments [4.4]', whereby individuals' knowledge is shaped by testing beliefs, could be applied here. In this way, positive experiences could result in the realisation that sports participation is enjoyable.

Concerning friends' approval, participants suggested that friends should explicitly communicate the message that they approve of their participation. This response can relate to the BCT 'Information about others' approval [6.3]' whereby information is provided about what others think. To increase its likelihood of success, the most important reason identified (i.e., socialization) could be included within these messages. Participants also suggested that actually experiencing participation with their friends could convey the message of approval. This suggestion can be linked with the technique 'Social support (practical) [3.2]' whereby

practical help is provided by significant others.

Similar to the approval of friends, responses concerning the approval of family members primarily concerned the technique ‘Information about others’ approval [6.3]’. To improve its effectiveness, this message should include the reasons elicited from the focus groups. For example, encouraging students that family members would want them to play because they would be happy, making friends and socializing could increase the effectiveness of the message.

To communicate the message that friends participate in recreational sport themselves, participants suggested this message could come from both friends themselves and facts and figures of participation rates. These suggestions can relate to ‘Social comparison [6.2]’, which draws attention to the behavior of others to allow comparison with their own behavior. Including the most important reason could improve the effectiveness of these messages. For example, friends informing students that they participate to socialize may persuade them to do the same. Participants also suggested that actually observing friends participating could provide the relevant information regarding their actual behavior. Technique specific, this can relate to ‘Demonstration of the behavior: modelling [6.1]’ whereby the behavior is performed and witnessed either directly (i.e., in person) or indirectly (i.e., using pictures).

Finally, a number of BCTs were elicited relating to time constraints. First, participants stated that actually committing to the decision to play sport could negate issues of time. Relating to the BCT ‘Commitment [1.9]’, this could involve students affirming or reaffirming their behavioral decision. Second, participants stated that the ability to plan their time more effectively could help with time constraints. ‘Action planning [1.4]’, which has been found to be highly successful in facilitating behavior change (Webb & Sheeran, 2007), could be a useful BCT to prompt participation in sport. The same BCT could also be used to develop greater organization. Specifically, if/then plans could provide students with relevant skills

that foster organization. Next, participants suggested that successfully engaging in the behavior could convince them that time constraints can be overcome. The BCT 'Self-monitoring of behavior [2.3]' could be of use here whereby the individual records when the behavior has been performed. Thus, successfully engaging in sport could result in the belief that issues of time are not necessarily barriers that cannot be overcome. Finally, participants suggested that being able to manage their time more effectively could be beneficial. Although there is no explicit mention of time management within the BCT taxonomy (v1; Michie et al., 2013), the technique is included within the CALO-RE taxonomy (2011). The technique attempts to free up times when the behavior could be performed available by teaching individuals how to manage their time.

When comparing the studies mapping BCTs to domains with those BCTs suggested by the focus groups above, all BCTs have been covered. That is, Michie et al. (2008) and Cane et al. (2015) identified similar BCTs to be influential in changing these types of psychological processes. For example, Michie et al. (2009) agreed that the domain 'Social influences' could be influenced through 'Modelling/demonstration of the behavior by others'. Similarly, Cane et al. (2015) suggested the same domain could be influenced through BCTs such as 'Information about others' approval' and 'Social support (practical)'. The study therefore provides support for the accuracy of these mapping approaches. Furthermore, those elicited from the focus groups could still be useful, particularly due to the number of BCTs theorized to influence each domain. Thus, although suggested within prior mapping approaches, those outlined within the study may demonstrate greater utility if integrated within an intervention. Some of these BCTs may also yield further benefits if integrated with the reasons and solutions, as outlined above.

Strengths

The study has a number of strengths. First, the study sought to identify the reasons

and solutions to identified beliefs. These explanations provide greater content for an intervention, as opposed to only identifying key beliefs. Second, the study utilized focus groups to gain the reasons and solutions to key beliefs, rather than questionnaires as done within the two prior studies. This method allowed for greater introspection and catered for the participant context. Third, the study sought to identify relevant BCTs that may be appropriate for changing psychological processes, particularly from the participant perspective. Understanding participant suggestions may lead to greater intervention utility. Finally, the study was underpinned by a well-established theory of behavior change and informed by two pieces of formative research. This rigorous research answers the call for an increase in theoretically informed behavior change interventions.

Limitations

Despite these strengths, the study also has some limitations. First, due to the number of psychological processes, BCTs have been linked to domains rather than specific beliefs. As such, the beliefs were placed within these domains, as opposed to being directly linked to BCTs. Nevertheless, the authors placed the identified beliefs within the domains deemed appropriate, which were then used to highlight relevant BCTs. Second, although the researcher strove to recruit participants with different views on sport, for example by using different degree subjects, it could be that those recruited nevertheless demonstrated a preference towards the behavior. Furthermore, the use of snowball sampling and the subsequent small sample size may restrict the generalizability of study findings. Next, BCTs were identified by inferring the meaning behind responses, thus it is possible that the researcher may not have accurately identified the BCTs that participants actually referred to. Finally, it is not guaranteed that those BCTs identified by participants would actually demonstrate effectiveness. Indeed, other BCTs linked to domains but not stated may also successfully change behavior.

Conclusion

To conclude, the study followed the work of Epton et al. (2015) and Vayro and Hamilton (2016) by identifying the reasons and solutions to key beliefs previously elicited in formative work. These reasons and solutions can help form the content of a theory-based intervention. The study also identified a number of potentially useful BCTs from the participant perspective that could be used within an intervention. These BCTs, in combination with the reasons and solutions, may demonstrate efficacy if developed and implemented within a behavior change intervention. The result of such work could be an increase the number of students participating in university recreational sport.

What Does This Article Add?

This qualitative study helps facilitate the content of a future intervention through the identification of reasons and solutions to beliefs previously found to influence participation in recreational sport. We found a number of reasons and solutions that could be integrated within messages to provide important information in favor of the behavior. The study also identifies a number of BCTs that can be specifically utilized within the intervention. These BCTs could be effective in bringing about change, particularly due to the limited success of previous interventions. We recommend that future studies also seek the opinion of the target population when developing theory-based messages. In doing so, the effectiveness of behavior change interventions may be significantly improved.

393 References

394 Ajzen, I. (1985). From intentions to action: A theory of planned behavior. In J. Kuhl & J.
395 Beckman (Ed.), *Action control: From cognitions to behaviours* (pp. 11-39). New
396 York, NY: Springer.
397 Ajzen, I. (2011). Behavioral interventions: Design and evaluation guided by the theory of
398 planned behavior. In M. M. Marks, S. I. Donaldson & B. Campbell (Eds.), *Social*
399 *psychology for program and policy evaluation* (pp. 74-100). New York, NY:
400 Guilford.
401 Author citation (In press)
402 Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research*
403 *in Psychology, 3*, 77-101.
404 Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains
405 framework for use in behavior change and implementation research. *Implementation*
406 *Science, 7*, 1-17.
407 Cane, J., Richardson, M., Johnston, M., Ladha, R., & Michie, S. (2015). From lists of
408 behaviour change techniques (BCTs) to structured hierarchies: Comparison of two
409 methods of developing a hierarchy of BCTs. *British Journal of Health Psychology*,
410 *20*, 130-150.
411 Coakley, J. J. (2009). *Sport in society: Issues and controversies*. New York, NY: McGraw-
412 Hill.
413 de Bruin, M., Crutzen, R., & Peters, G. J. Y. (2015). Everything should be as simple as
414 possible, but this will still be complex: A reply to various commentaries on IPEBA.
415 *Health Psychology Review*, *9*, 38-41.
416

Epton, T., Norman, P., Harris, P., Webb, T., Snowsill, F. A., & Sheeran, P. (2015). Development of theory-based health messages: Three-phase programme of formative research. *Health Promotion International*, *30*, 756-768.

Gucciardi, D. F., & Jackson, B. (2015). Understanding sport continuation: An integration of the theories of planned behaviour and basic psychological needs. *Journal of Science and Medicine in Sport*, *18*, 31-36.

Huesman Jr, R., Brown, A. K., Lee, G., Kellogg, J. P., & Radcliffe, P. M. (2009). Gym bags and mortarboards: Is use of campus recreation facilities related to student success?. *NASPA Journal*, *46*, 50-71.

Kampf, S., & Teske, E. J. (2013). Collegiate recreation participation and retention. *Recreational Sports Journal*, *37*, 85-96.

Kanters, M. A. (2000). Recreational sport participation as a moderator of college stress. *NIRSA Journal*, *24*, 10-23.

Krueger, R. A., & Casey, M. A. (2014). *Focus Groups: A practical guide for applied research* (5th ed.). Thousand Oaks, CA: Sage Publications.

Michie, S., Ashford, S., Sniehotta, F. F., Dombrowski, S. U., Bishop, A., & French, D. P. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & Health*, *26*, 1479-1498.

Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: Mapping theoretically derived behavioral determinants to behavior change techniques. *Applied Psychology*, 57, 660-680.

Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., . . . Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93

hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine, 46,* 81-95.

Prestwich, A., Kellar, I., Parker, R., MacRae, S., Learmonth, M., Sykes, B., . . . Castle, H. (2014). How can self-efficacy be increased? Meta-analysis of dietary interventions. *Health Psychology Review, 8,* 270-285.

Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review, 8,* 1-7.

Sport England. (2012). *Creating a sporting habit for life*. Retrieved from https://www.gov.uk/government/publications/creating-a-sporting-habit-for-life-a-new-youth-sport-strategy.

Sport England. (2014). *Higher Education Sport Participation and Satisfaction Survey. National Report. Year Three*. TNS BMRB: England.

Vayro, C., & Hamilton, K. (2016). Using three-phase theory-based formative research to explore healthy eating in Australian truck drivers. *Appetite, 98,* 41-48.

Webb, T. L., Joseph, J., Yardley, L., & Michie, S., (2010). Using the internet to promote health behavior change: A systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research, 12,* e4.

Webb, T. L., & Sheeran, P. (2007). How do implementation intentions promote goal attainment? A test of component processes. *Journal of Experimental Social Psychology, 43,* 295-302.

Table 1

Participant demographics including age, sex, and degree program

Demographic		**N (22)**
Age (years)	M = 19.8	
	SD = 1.3	
Sex	Male	8
	Female	14
Degree program	Primary Physical Education & Sports Coaching	2
	Secondary Physical Education & Sports Coaching	2
	Sport & Exercise Sciences	1
	Exercise, Health & Nutrition	2
	Early Childhood Studies	4
	Business & Management	2
	History & Philosophy	1
	Counselling Psychology	1
	Forensic Psychology	1
	Film & Television Production	2
	Television Production	1
	Media & Marketing	3

Note. All data is from self-report.

Table 2
Example of questions used in focus group discussions

Type of questions	**Example of questions asked**
Engagement questions	*In your opinion, what are the good and bad things about sport?* *Describe what you think about the recreational sport that the university offers*
Exploration questions	*What are the reasons your friends would want you to participate in sport?* *What are some of the solutions to sport being time consuming?* *Which of these reasons do you think is the most important?*
Technique questions	*What are some of the ways university sport can be made more enjoyable?* *Can you name some strategies that can be used to attend to issues of time?*
Exit questions	*Describe any other things that could be done to increase participation rates?* *Are there any other things that you think should be included within an intervention to increase participation rates?*

Table 3

Reasons why university recreational sport is enjoyable

Reason given	Focus group(s) stating the reason	Example quote
Socializing	1, (1)2, *3, (1)4	"You'll find it much more enjoyable if you are playing with people that you get on with"
Lack of competition	*1, 3	"is good for those who don't want to play in a competitive environment"
Health & fitness benefits	1, 2, 3, (2)4	"perceive it to be enjoyable if you are getting healthier"
Improves mental well-being	(2)2, 3, 4	"if you can improve mentally, and by that I mean you just feel better from exercising and playing, then the chances are you'll enjoy it"
Make friends	3, 4	"You might not intend to go and make friends, you might just want to play because you enjoy it but you still end up meeting new people"
Stress relief	1, 4	"relaxes your mind and gives stress relief"
Improve sport-specific skills	1, 4	"If you can improve your sports skills and get better then that will make you enjoy it more"
Low cost	2, 4	"If you pay just a couple of quid then you aren't worrying about money"
No commitment needed	2, 3	"you aren't tied to anything or you don't have to do it. You have the option of turning up"
Low number due to university size	1, 4	"It's smaller so you know the people who go there"
Potential avenues to sports teams	3	"a way to maybe get into a team so if that happens or if you feel that it could happen then that could be a reason for making it more enjoyable"
Improves academic performance	4	"improves studies because you're relaxed"
Undertaking a new sport	2	"playing a sport that you aren't familiar with, one that you haven't done before"
Opportunity to impress	2	"the opportunity to show off with your skills, like showing people how good you are"

*represents the most important reason stated by a focus group

(1)represents the most important reason when a focus group were not in agreement

(2)represents the second most important reason when a focus group were not in agreement

Table 4

Reasons why friends approve of participation in university recreational sport

Reason given	Focus group(s) stating the reason	Example quote
Socializing	*1, *2, *3, *4	"want you to play cos you'll be with them"
Health & fitness benefits	1, 3, 4	"They'd want you to get the physical benefits and be fitter"
You would be happy	1, 2	"you would be with them whilst you're playing. And from the perspective of your friends, the fact you're with them would make you happy"
Improve sport-specific skills	3, 4	"They might encourage you to play to get better, or want you to play because you can get better"
Create competitiveness	1, 4	"I know we're talking about non-competitive sport, but you could make it competitive with your friends"
Study relief	2, 3	"if like playing sport takes the pressure off university work then your friends would like be happy with that"
Sensible activity	2, 4	"approve of you doing something productive, like playing sport"
Money saving	2, 4	"saving money by playing because it's not expensive"
To win a bet	4	"if I beat you then you owe me a drink or if we beat you then you have to do something"
To meet a partner	1	"They also might want you to meet someone. It's quite a slim chance but they could have that reason"
Opportunity to discuss studies	3	"you have the chance to catch up and maybe talk about work together"

*represents the most important reason stated by a focus group

Table 5

Reasons why family members may approve of participation in university recreational sport

Reason given	Focus group(s) stating the reason	Example quote
Happy/enjoyment	*1, *2, 3	"would want you to be happy and enjoying yourself"
Socializing	3, *4	"you'd be with your friends socializing"
Make friends	1, *3	"If they think that you're playing with mates or making new mates then that's another reason for them to approve of it"
Health & fitness benefits	1, 2, 3, 4	"They will encourage it because you are becoming healthier, that's a positive reason"
Productive/sensible activity	2, 3	"you could be doing other social activities like going out drinking or on the sesh. I reckon family members would approve of you more playing sport"
Safety of location	3	"They want you to be safe. They wouldn't be worrying in a way"
Saving money	4	"would want you to have money to use and not waste"
Develop a competitive edge	1	"you might not be competitive at the start but this might develop and from the perspective of the family member this might be seen as good. They might want this competitive edge to you"
Develop a sporting habit	4	"could be happy if you develop sport into like a habit"
Make them proud	4	"If you aren't active and then all of a sudden you are then you could make them proud"
Study relief	1	"it's taking the pressure off studying"
Aware of your location	3	"they know where you are"
To meet a partner	1	This reason was stated on a post-it note but not discussed. Therefore, there is no direct quote for this reason.
Make new friends	1	"making friends as well"

*represents the most important reason stated by a focus group

481 Table 6
482 *Reasons why friends participate in university recreational sport themselves*
483

Reason given	Focus group(s) stating the reason	Example quote
Socializing	*1, *2, *3, *4	As these reasons had already been covered within prior belief questions, participants were asked to just rate the most important. As such, there are no quotes relating to the participation of friends.
Health & fitness benefits	1, 2, 4	
Enjoyment	1, 2, 4	
Improve sport-specific skills	1, 3, 4	
Improve mental well-being	3, 4	
Study relief	2, 3	
To be active	3, 4	
Make new friends	1, 3	
Something to do	2	
To meet a partner	1	
Lack of competition	4	

484 *represents the most important reason stated by a focus group

Table 7

Solutions to time constraints influencing participation in university recreational sport

Solution given	Focus group(s) stating the solution	Example quote
Organization	*1, *2, *3, [(1)]4	"Better organization or preparation"
Prioritize	1, [(2)]4	"This relates to the priorities of social activities in that we might say we will but we don't because we get distracted or convinced into doing something else"
Commit to decision	1, 2, 3	"we sometimes go into things like this not fully committed and then make out like we don't have enough time"
Plan in advance	3, 4	"planning your time can help"
Set reminders	1, 4	"Having a reminder would make sure you don't forget"
Organize with friends	2	"can organize it to go as a collective"
Reduce the number of social activities	4	"the number of social activities, reducing how many you get involved in"
Complete university work quickly	2	"If we do our work quicker then we can free up time to play sport"
Allow greater flexibility	2	"sometimes don't let ourselves enjoy things because we think that we have work to do but if we did then we would have more time for sport"
Be encouraged	3	"if we have friends who play and almost force us to go with them. If they are going and drag you along then you almost make the time for it"

*represents the most important solution stated by a focus group

[(1)]represents the most important solution when a focus group were not in agreement

[(2)]represents the second most important solution when a focus group were not in agreement

Table 8

Potential BCTs from the perspective of the focus groups

Targeted belief	Focus group response concerning potentially effective BCTs	Focus group(s) stating the BCT	Related technique from the BCT taxonomy (v1)
Enjoyment	Convince students	1	Information about emotional consequences
	Use posters	3	" "
	Use flyers	4	" "
	Use friends and members of the sports development team	1, 2	Credible source
	Experience participation	2	Behavioral experiments
Friends (injunctive)	Inform students of approval	1, 2, 3, 4	Information about others' approval
	Experience participation as a group	2, 3	Social support (practical)
Friends (descriptive)	Use friends themselves	1, 2, 3	Social comparison
	Provide facts and figures	1, 4	" "
	Observe friends participating	4	Demonstration of the behavior/Modelling
Family (injunctive)	Inform students of approval	1, 2, 3, 4	Information about others' approval
Time constraints	Commit to the decision	1, 2, 3	Commitment
	Make use of planning	1, 3, 4	Action planning
	Greater organization	2, 3, 4	Action planning
	Manage time more effectively	1	Time management (within the CALO-RE taxonomy)
	Successfully participate in the behavior	4	Self-monitoring of behavior